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THE FOREST INSECT PROBLEM IN THE COBB MOUNTAIN RESORT AREA OF LAKE COUNTY, CALIFORNIA

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INTRODUCTION

The Cobb Mountain Resort Area is but one of several in which insect infestations of an epidemic character were present in pine stands during the 1938 season. In Napa County the outbreak killed groups of young and thrifty ponderosa pines on the Los Posados State Forest. Near Mount St. Helena, on the line between Napa and Lake Counties, several smaller infestations were found scattered through the forested area. On the Mendocino National Forest, ~~in~~ to the north, scattered groups of reproduction and poles were killed.[1]

In the Cobb Mountain Resort Area large and small groups of young, thrifty pine trees were killed along well traveled roads, near resort buildings, and in the yards of privately owned summer homes. In addition, similar groups were scattered through the less intensively used portions of the approximately 17,000 acres of pine forest in the main body of timber (fig. 1, map). Users of the area diagnosed the cause of the death of the trees as forest insects and realized the importance of the outbreak. Late in 1938 they vigorously presented to the State Board and Division of Forestry and to the Berkeley laboratory of the Bureau of Entomology and Plant Quarantine, United States Department of Agriculture, the need for an appraisal of conditions, an analysis of the current situation, and advice as to what action should

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1/ Reported by W. F. Derby, Assistant Forest Supervisor.

be taken. They were advised to cut down the peak barkbeetle population in the area by direct control measures, utilizing the felling, peeling, and burning method. Private owners have taken the lead in treating infestations on their own properties in intensively used areas. The State Division of Forestry obtained an authorization to treat outlying infestations in ranch, grazing, and other unmanaged stands of low recreational value, the infestations of which threatened the recreational centers.

An analysis of the current situation showed that the control project carried on against the 1938 infestation was chiefly an attempt to meet an emergency. Owing to the high recreational value of the area and the intensive use given the Cobb Mountain stands, it should be recognized that forest insects threaten both existing and future values. Definite plans should be developed to meet that threat by adequate, organized, and continuing action.

APPRAISAL OF CONDITIONS

Interests and Values

The chief reasons why the Cobb Mountain Resort Area has been developed as a recreational center of considerable local and regional importance are as follows:

1. Location. The nearness to large urban populations in the San Francisco and Sacramento Valley regions is a factor of considerable importance in the development and use of the area.

2. Physical Factors. The presence of an abundant water supply has allowed the development of recreational facilities representing large investments. Mineral springs attract many people seeking health and recreation. Attractive summer climatic conditions exist.

3. Vegetation. The large island of pine timber covering the mountain area, and in which the resorts are concentrated, furnishes recreational possibilities and values in marked contrast to the recreational liabilities of the oak woodland and brushy slopes surrounding the pine area.

First-class hotels and lodges, stores, and public and private summer homes and cabins have been built in the pine stands because of the recreational possibilities of that locality. The presence of an area of this type in a location accessible to, and supplying values demanded by, a large population creates considerable public interest in the maintenance and protection of existing values. It is decidedly in the public interest, both from the local and from the more inclusive regional standpoint, that the recreational developments and facilities be protected and that the natural factors on which these developments are dependent for continued use in recreation be conserved.

Existing Forest Protection

The pine stands are one of the important factors that make the Cobb Mountain Resort Area a valuable public playground. The protection of those stands from fires already has been provided for by the development of fire-protection plans and resources by cooperative efforts of private owners and the California Division of Forestry of the Department of Natural Resources.

No plans have heretofore been developed to protect these stands from forest insects, the destructive attacks of which sooner or later must be reckoned with in the management of practically all pine-clad areas in California.

Stand Conditions

For the most part conditions affecting the pine stands have not been productive of excessive insect-caused depletion. Climate and soil factors in general have favored the stands and have produced healthy trees having rapid growth rates. Old logging operations in the more accessible areas have resulted in dense, second-growth stands up to about 90 years old in which most of the camp and resort developments have been made. The less accessible areas in canyons and on ridge tops and mountain slopes carry overmature stands. At the higher elevations some sugar pine occurs with the ponderosa pine. On sheltered slopes Douglas fir is abundant and a scattering of incense cedar occurs in many parts of the area. Ponderosa pine is the important species over most of the area.

Infestation History

The history of past losses has not been alarming. It is probable that a loss greater than normal occurred in 1922 as a result of storm damage. In that year losses in standing trees amounted to a total of over 15 million board feet on less than 75,000 acres near Upper Lake. Undoubtedly the Cobb Mountain Area did not escape unharmed.

In the overmature stands it is evident, from the scattered snags on the slopes, that a relatively high, but nevertheless normal, killing off of the decadent ponderosa and sugar pines has been going on for some time. A similar loss has been occurring in young pine pole thickets. This has resulted in the thinning and opening up of dense pole stands, a process which ordinarily accompanies increased size of trees and increased age of stands.

The 1938 infestation was one of unusual intensity. Thrifty, second-growth pine poles were infested and killed in localized groups scattered through the area. As many as forty or fifty trees were killed in some single groups. Many of the groups were distant from resorts and cabins and so did not interfere seriously with the use of the area as a recreational center. Other groups occurred in yards of summer homes and resorts, however, and the killing of the trees in these locations was a loss of considerable importance to the individual property owners.

Cause of the 1938 Outbreak

It is difficult accurately to determine all the factors that caused or contributed to the occurrence of the 1938 outbreak. Several conditions, however, may reasonably be considered to be sources of the bark beetle populations directly concerned in the 1938 infestation.

1. Endemic Infestations. The overmature stands apparently furnished the background for the outbreak by producing, as a result of continuing endemic or normal loss, nucleus populations of the western pine beetle (Dendroctonus brevicomic Lec.) and the five-spined engraver beetle (Ips confusus Lec.).

2. Fire Injury. In the fall of 1936 a fire occurred on the southwest slopes of Mount Hannah. Many trees were scorched and weakened, later to succumb to bark beetle attacks. The infestation still was active in part of the burned area in February 1939. It is probable that between 1936 and 1938 heavy bark beetle populations were produced in the infested trees. Those populations could have been at least partially responsible for a build-up of population levels in areas outside the fire zone.

3. Termination of Logging Activities. In the fall of 1937 a mill on the northerly slopes of Mount Hannah stopped logging, leaving many green tops and slashings on the area. For the most part these were well shaded and produced large engraver and western-pine beetle populations late in 1937 and early in the 1938 season. The effects of those populations are to be seen in the 70-odd trees that were killed on the cutover area in 1938. It is possible that other beetles produced in the same slash contributed to group kills in other parts of the Cobb Mountain Resort Area.

4. Building Construction. In the resort area proper, building has been going on for some time. In many cases turpentine beetles (Dendroctonus valens Lec.) were attracted to the new lumber and attacked the root crowns of trees adjacent to the buildings. For the most part they were unsuccessful in killing the trees. However, repeated attacks, aided by misuse of the trees, enabled them to kill some trees the boles of which subsequently were infested by the western pine beetle. Bark beetle broods from such trees are available for attack on other living trees.

5. Snowbreak of 1937-38. During the winter of 1937-38 heavy, wet snows broke the tops from a large number of thrifty pine poles scattered throughout the timbered area. Early in 1938 this material filled up with bark beetles and produced heavy broods available for attacks on living trees.

Although no one of the above conditions can be considered the cause of the 1938 outbreak, the net effects of all of them apparently resulted in the production of extremely heavy populations of the western pine beetle and the five-spined engraver beetle. The insects had to go somewhere. With little or no evident selection of trees or of areas, the engraver beetles, followed by the western pine beetle, attacked and killed most of the trees that comprise the 1938 loss.

ANALYSIS OF THE FOREST INSECT PROTECTION PROBLEM

Nature of the Problem

The requirements for management and protection of stands on recreational areas are much more exacting than for comparable areas used chiefly for the production of timber. Thus, it is essential that plans for the Cobb Mountain area be laid only after careful consideration of all phases of the problem. A protection system should be of sufficient detail to meet future as well as current situations.

Present stand conditions give little indication that epidemic infestations have figured predominantly in the history of past losses in the area. Actually, however, there are no tangible loss records on which to base a conclusion. The presence of old insect-killed snags scattered through the mature forest is an indication that endemic losses have been the rule and epidemic infestations have been the exception.

Current infestations are disturbing. The 1938 outbreak has shown that conditions do occasionally exist which favor epidemic infestations. Our examinations have shown that certain factors probably are weakening the trees and favoring the insects. Use of the area is increasing and the stands will become less thrifty and less resistant to insect attack as they become older. It is a foregone conclusion that, as use becomes more intensive and the stands become older, the hazard of loss from insect attacks and the rate of destruction of recreational values will increase. This increased hazard will be of much greater importance than may appear today, and for the need of applying measures which will cause a reduction in losses and maintain recreational values will be greater in the future than at present. Considering the future of the area, the prevention of future losses is as important, if not more important, than the control of current infestations.

Insect species Active on the Area

All ~~of~~ the insect species commonly associated with the forest insect problem in the commercial forests of California are present and active in the Cobb Mountain Resort Area. The following are some of the more important species.

1. The Western Pine Beetle. The role of this insect in the 1938 outbreak already has been described. It also will be found to play an important part in causing endemic losses in the overmature stands.

See change they never miss an opportunity!

2. The Mountain Pine Beetle (Dendroctonus monticolae Hopk.). This species was found in a few trees that died in 1938. It usually causes a fill-in or supplementary type of infestation in mature ponderosa pine. It often makes vigorous attacks on ponderosa pine poles, however, and is the species usually responsible for the death of immature and mature sugar pines.

3. The Five-Spined Engraver Beetle (Ips confusus Lec.). The role of this species in the 1938 infestation of ponderosa pine poles also has been described. It breeds in slash, snowbreaks, and windfalls, and when it attacks standing trees usually does not confine its activities to the more decadent mature individuals, but infests the tops of some of the healthiest appearing trees. Often its attacks seem to be responsible for the killing of groups of trees. This species also attacks sugar pine.

4. The Turpentine Beetle (Dendroctonus valens Lec.). The attacks of this species attract more attention around recreational areas than do those of other more important species. The large pitch tubes formed around the bases of living trees often merely are evidence of relatively indiscriminate and unsuccessful attacks. Although this insect, by repeated attacks or with the help of other factors, can kill trees, it is not the most dangerous species unless aided by other factors that weaken the infested trees.

5. The California Flathead Borer (Melanophila californica VD.). The thrifty second-growth stands in this area are not susceptible to vigorous attacks by this species. It is related to the decadence of ponderosa pines in the overmature stands, however, and to the maintenance of a relatively high normal loss level in those stands.

6. The Fir Flathead Borer (Melanophila drummondi Kirby). Most of the Douglas fir that has been killed recently on this area has been infested by this flathead borer. It is involved in the death of young and old trees as well as in the decadence of the mature individuals.

Protection Needs

It is evident that adequate protection from the depredations of forest insects can be best obtained for this area by a system that gives adequate recognition to the threat from forest insects and provides methods and action sufficient to keep the work on a relatively high plane of efficiency. Such a system must be developed along four fundamental lines of effort, as follows:

1. Periodic Appraisal. It does little good to know that an infestation has occurred. Periodic appraisals are therefore necessary to detect dangerous situations and determine infestation trends before epidemic infestations develop. The detection of incipient outbreaks, appraisal of current conditions, and analysis of trends should be based on the best technical knowledge available.

2. Prevention Practice. Use, or rather misuse, of recreational areas, is one factor of great importance in the development of infestations and the loss of values in them. A protection system for the Cobb Mountain Resort Area should provide for highly developed preventive measures.

3. Control Action. The maintenance of bark beetle populations at a low level is good business in the protection of intensively used recreational areas. A protection system should develop an organization to carry on direct control whenever that action is necessary.

4. Education. When we face the need for developing a suitable protection system it immediately is evident that we know too little rather than too much as to why infestations develop and how to prevent them from developing to epidemic stages. If that is true of those concerned with the technical phases of forest insect control, it is doubly true of the communities and the property owners on whom the practice of control measures in the field must rest.

The problem of forest insect control in the Cobb Mountain Resort Area is not an individual problem. It is a community problem, for several reasons. Insects recognize no land lines. Though one owner may escape in one season, he has a vital interest in his neighbor's infestation, because of the threat from the next bark beetle brood being developed in his neighbor's trees. Distance seems to offer little protection, for from what is known it seems likely that an outbreak in any portion of the 17,000-acre area can be a threat to any other portion of the area.

RECOMMENDATIONS

Detection

In the detection of outbreaks, the appraisal of conditions, and the analysis of infestations the best technical knowledge that is available should be utilized. The Bureau of Entomology and Plant Quarantine is engaged in that type of work and maintains an annual survey of conditions on approximately 6,500,000 acres of timberland in the State. Those surveys do not include appraisals of infestation conditions in the north coast counties, however, in one of which the Cobb Mountain Resort Area is located. The importance of the north coast stands for recreational purposes and the high standards of protection required by such stands make it desirable that the surveys be extended to include them. The Cobb Mountain area should be included in that extension. Annual appraisals of infestation conditions should be the rule, with supplemental examinations to be made when conditions warrant them.

Control

The Bureau of Entomology and Plant Quarantine's chief objective in the forest insect problems of the California region is research and the development of control measures. The background of that work, as it applies to forest insect control and prevention in recreational areas, is available to the property owners and administrators of the Cobb Mountain Resort Area.

The practice of preventive and control measures is chiefly a responsibility of the land owners and of the community. At the present time there is no central organization or group representing the community in such matters. Though all the individuals in the area who have been consulted were interested in protection from insect damage, and many of them were taking active measures on their own lands, no responsible community-sponsored group is available to direct the efforts of the individuals, to crystallize control plans, or to act as agents for the community in the field of forest insect protection. Organization is one of the first requirements, since control is a problem to be considered year after year and to be met on short notice and under emergency conditions. Such an organization could assume the leadership in carrying on a coordinated and effective program whenever control is recommended as necessary.

Berkeley, California,
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